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10/738,543	12/17/2003	Torsten Gottschalk-Gaudig	WAS 0611 PUS / Wa 10239-S	8271

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ART UNIT	**PAPER NUMBER**
1792	
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12/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/738,543	GOTTSCHALK-GAUDIG ET AL.	
	Examiner	Art Unit	
	Elena Tsoy Lightfoot	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-19 and 30-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-19 and 30-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

Amendment filed on October 2, 2008 has been entered. New claims 32-36 have been added. Claims 15-19 and 30-36 are pending in the application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Rejection of claims 17-19 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been withdrawn due to amendment.

3. Rejection of claims 17-19 under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for $R^1{}_nSiX_{4-n}$, wherein n is 1, 2, 3 as in claim 15 does not reasonably provide enablement for $R^1{}_3SiX_{y-n}$ because y is unknown has been withdrawn due to amendment.

4. Rejection of claims 17-19 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement has been withdrawn due to amendment.

5. Rejection of claim 18 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been withdrawn due to amendment.

6. Claim 32 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 32 recites $\mathbf{R}^7$, which was not described in the specification.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Rejection of claims 17-19 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn due to amendment.

9. Claims 19 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 further limits $\mathbf{R^3}$, which renders the claim indefinite because claim 17 does not recite $\mathbf{R^3}$. For examining purposes the phrase was interpreted as $\mathbf{R^1}$.

Claim 32 further limits $\mathbf{R^7}$, which renders the claim indefinite because claim 17 does not recite $\mathbf{R^7}$. For examining purposes the phrase was interpreted as $\mathbf{R^1}$.

10. Claims 32-33 recite the limitation "The composition of claim 17" in line 1. There is insufficient antecedent basis for this limitation in the claim. For examining purposes the phrase was interpreted as “The particles of claim 17”.

11. Claims 34-36 recite the limitation "The composition of claim 15" in line 1. There is insufficient antecedent basis for this limitation in the claim. For examining purposes the phrase was interpreted as “The particles of claim 15”.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 15-19 and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barthel et al (US 5686054).

Barthel et al is applied here for the same reasons as set forth in paragraph 9 of the Office Action mailed on 7/02/2008.

As to Amendment of claim 15, Barthel et al teaches that the *pyrogenic* silica is prepared from halosilicon compounds in a known manner by e.g. hydrolysis of silicon tetrachloride in an oxyhydrogen gas flame (See column 3, lines 63-64), i.e. under *anhydrous* conditions as required by Amendment.

As to claim 16, limitations of the claim have not been addressed as further limiting *optional* non-selected organosiloxane of claim 15.

As to claims 18 and 19, limitations of the claims have not been addressed as further limiting *optional* non-selected mixture of I) and II) of claim 15.

As to claims 34-36, the *pyrogenic* silica having primary particle size of from 2 to 50 nm (See column 3, line 53) with a specific surface area of 150-250 m^2/g (See column 3, lines 56-57), e.g. **200 m^2/g** (See column 11, lines 1-6) with a silylating agent of formula $R^1_nSiX_{4-n}$ wherein n, R^1 and X are identical to that of claimed invention (See column 4, lines 24+) such as *dimethyldichlorosilane* (See column 10, line 65) in an amount of **2-100** parts by weight per 100 parts of silica (See column 6, lines 41-45). Clearly, the degree of hydrophobicity of silylated silica would depend on the amount of silylating agent: silica treated with an amount of silane in lower part of the range would be less hydrophobic than treated with an amount of silane in

higher part of the range. Note that claimed partly hydrophobic silica is described in the Applicants' specification as being obtained by treating dry method silica having surface area 200 m^2/g with **2.86 g** of *dimethyldichlorosilane* per 100 parts of silica (See Example 1 of specification). Therefore, when *dimethyldichlorosilane* is used in Barthel et al in the amount of **2-2.86** g per 100 parts of silica, claimed partly hydrophobic silica would be obtained because *pyrogenic* silica of Barthel et al also has surface area of 200 m^2/g (See column 11, lines 1-6) and is treated with *dimethyldichlorosilane* in an amount of **2-2.86** g, *partly* hydrophobic silica having all claimed properties would be obtained. Namely, the treated silica would have a contact angle **θ** in air for water of less than 90^0, the degree of coverage **τ** of the surface of the silica with silylating agent residues, based on the total silica particle surface area, being $1\% < \tau < 50\%$, the density of the surface silanol groups SiOH ranging between a minimum of 1.2 and a maximum of 1.7 $SiOH/nm^2$ particle surface area, and the particles having a carbon content of less than 0.1% by weight and up to 0.5% by weight, and a methanol number of less than 20.

14. Claims 15-19 and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al (US 5278204).

Tojo et al are applied here for the same reasons as set forth in paragraph 10 of the Office Action mailed on 7/02/2008. Tojo et al discloses that silica for silane-treating is prepared by ***dry method*** (i.e. under *anhydrous* conditions) (See column 5, line 4).

As to claim 33, limitations of the claim have not been addressed as further limiting *optional* non-selected organosiloxane of claim 17.

Response to Arguments

15. Applicants' arguments filed October 2, 2008 have been fully considered but they are not persuasive.

Barthel et al

Applicants argue that the prior claims had been rejected over Barthel, who requires that all his very hydrophobic silicas have methanol numbers greater than 50, and preferably much higher, regardless of how they are prepared. Applicants' claims require a maximum methanol number of 30. Barthel thus teaches away from the claimed invention.

The Examiner respectfully disagrees with this argument. Barthel uses a silylating agent of formula $R^1_nSiX_{4-n}$ wherein n, R^1 and X are identical to that of claimed invention (See column 4, lines 24+) such as *dimethyldichlorosilane* (See column 10, line 65) in an amount of **2-100** parts by weight per 100 parts of silica having surface area **200 m^2/g**. Clearly, the degree of hydrophobicity of silylated silica would depend on the amount of silylating agent: silica treated with an amount of silane in lower part of the range would be less hydrophobic than treated with an amount of silane in higher part of the range. Therefore, silica treated with **2 parts** of the silylating agent would be less hydrophobic than silica treated with **100 parts** of the silylating agent. The properties described by Barthel at column 8, lines 47-67 may relate to highly apolar silica obtained with 50-100 parts of the silylating agent.

Note that the Applicants use **2.86 g** of *dimethyldichlorosilane* per 100 parts of dry method silica having surface area **200 m^2/g** (See Example 1 of specification). Thus, the amount of dimethyldichlorosilane in Barthel et al overlaps the amount of 2.86 of the Applicants' Example 1. Note also that the process of Barthel would be exactly as in Example 1 of the Applicants' specification as originally filed, namely, treating silica having **200 m^2/g** (not 100 m^2/g as in comp. Example 2), with **2.86 g** of dimethyldichlorosilane (not 4.29 g or 9.9 g as in comp. Examples 2 and 3), per 100 g of silica such that silica was treated with 0.11 mmol/g of silane per 100 m^2/g of silica whereas in the comparative example 2, Applicants used 0.22 mmol/g of silane per 100 m^2/g of silica, and in the comparative example 3, Applicants used 0.29 mmol/g of silane per 100 m^2/g of silica.

Thus, Barthel does not teach away from the claimed invention.

Tojo et al

(A) As Tojo indicates at column 5, first full paragraph, when dry method silica such as fumed silica is used in his process, all the surface silanol groups are blocked. Thus, the silicas of Tojo cannot have a surface silanol content of 0.9 to 1.7 SiOH/nm2 as required by the claim. Claim 15 requires that the starting silica is dry process silica.

The Examiner respectfully disagrees with this argument. Tojo uses the silylating agent in an amount varying within a wide range. Therefore, the degree of blockage would also vary within a wide range: the surface silanol groups could be fully blocked at higher end of the range, but not fully blocked at lower range.

(B) Applicants argue that Tojo also does not disclose the contact angle nor the methanol number of his silicas, and as explained earlier, the amount of silylating agent does not determine these values, since the silylating agents themselves may vary, the starting silanol content may vary, the degree of reaction may vary, and the surface area of the silica may vary. Thus, whether or not Tojo employs the same amount of silylating reagents or not, or has the same carbon content, are both irrelevant to contact angle, surface silanol content, or methanol number.

The Examiner respectfully disagrees with this argument. First of all, a silane of Tojo, e.g. allyltrimethoxysilane reads on claimed silane I since it has structure of ***claimed* formula I**. Second, even with assumption of fully reacted silane, hydrophobicity of silica in Tojo would very within a wide range because the amount of the silnae varies within a wide range **0.45g -22.5 g,** and the surface area of silica varies within a wide range 100-300 m^2/g. Clearly, silica of Tojo treated with **0.45g** silane having structure of *claimed* formula I, e.g. of the allyltrimethoxysilane per 100 g of silica having a specific surface area of **300 m^2/g**, would be *much less* hydrophobic than silica treated with **22.5 g** (i.e. in an amount that **50 times** larger than 0.45 g) of the same silane per 100 g of silica having much less surface area of **100 m^2/g**. In other words, some silica treated by a method of Tojo would be substantially identical to that of claimed invention and some of the treated silica would not be substantially identical to that of claimed invention.

(C) Applicants argue that as Table shows, the first two examples, the same amount of silylating agent is used, 4.29 weight percent, and the silica carbon content of the product is very close. Yet, one product is water wettable with a methanol number of 0 (all the silica particles are wetted by pure water), while the comparative product requires 45 weight percent methanol to be

wettable. In a yet third example, the amount of silylating agent was doubled, yet the % carbon Tojo does not teach or suggest the claim requirements of the silica of claim 7. The residual silanol content is not disclosed, and neither is the methanol number.

The Examiner respectfully disagrees with this argument. The given examples do not prove anything because the examples are incomparable: the first two examples use ***different*** silica, i.e. with different surface area (note that silica having surface area of **300 m^2/g** treated with 4.29 would be less hydrophobic than silica having surface area of **100 m^2/g** treated with the same amount of 4.29), and the first and third examples use ***different*** silanes. Proper comparison can be made only with ***all things being equal*** except for the amount of the silane.

(D) Applicants argue that the rejection, as is the case with Barthel, appears to be based on principles of inherency, which do not apply to rejections under 35 U.S.C. § 103(a).

The Examiner respectfully disagrees with this argument. The Office Action stated: "It is well settled that **overlapping** ranges are *prima facie* evidence of obviousness. *In re Malagari*, 184 USPQ 549 (CCPA 1974). Therefore, it would have been obvious to one having ordinary skill in the art to have selected the portion of Tojo et al's range that corresponds to the claimed range. It is the Examiner's position that dry method silica having treated with silane of claimed formula $R^1_nSiX_{4-n}$ in an amount of the portion of Tojo et al's range that corresponds to the claimed range, per 100 parts of silica would have all claimed properties because the process of Tojo et al would be substantially identical to that of claimed invention".

Thus, in contrast to Applicants argument, the 102 principles of inherency was not applied. The same applied to rejection over Barthel.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy Lightfoot whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Friday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy Lightfoot, Ph.D.
Primary Examiner
Art Unit 1792

December 11, 2008

/Elena Tsoy Lightfoot/